Mariesha R McAdoo. Re-envisioning Data for Impact: A Case Study of a Durham Nonprofit Organization. A Master's Paper for the M.S. in I.S degree. May, 2020. 42 pages. Advisor: Amelia Gibson

Although the process of collecting and analyzing data to inform action is not a novel practice, advances in storage capacity and processing speed have augmented the scale with which data-driven decision making can be executed. This innovation has propelled increased attention towards improving data literacy and data management across industries. In the context of nonprofit organizations, recommendations for leveraging data to enhance impact measures often neglect the cultural and environmental factors that hinder the implementation of these advices. The disconnect between best practice and practicality results in the repeated chastising of organizations who may know what forms of data will satiate industry standards, but do not have the means or the immediate need to access that type of data. This research uses a case study to demonstrate barriers overlooked by generalized data literacy resources and further contribute to discourse amplifying the realities of data infrastructure in smaller, community-based nonprofit organizations.

Headings:

Nonprofit organizations

Data analysis

Information systems

RE-ENVISIONING DATA FOR IMPACT: A CASE STUDY OF A DURHAM NONPROFIT ORGANIZATION

by

Mariesha R McAdoo

A Master's paper submitted to the faculty
of the School of Information and Library Science
of the University of North Carolina at Chapel Hill
in partial fulfillment of the requirements
for the degree of Master of Science in
Information Science.

Chapel Hill, North Carolina

May 2020

Approved by

_____

Amelia Gibson

Table of Contents

Introduction

The process of collecting and analyzing data for the purposes of justifying decisions and developing a course of action is not a novel practice. Nonetheless, gradual advances in machine storage capacity and processing speed have augmented the scale with which this sort of data-driven decision making can be executed. As a result, this innovation has propelled increased attention towards improving data literacy and data management across industries. In the context of non-governmental nonprofit organizations, recommendations for leveraging data to enhance measures of impact often neglect the cultural and environmental factors that hinder the implementation of these advices. The disconnect between best practice and practicality results in the repeated chastising of organizations who may know what forms of data will satiate industry standards, but do not have the means or the immediate need to access that type of data.

Limited funding is a persistent concern that influences how, and to what extent, many nonprofit organizations interact with client data and data management. However, there are additional considerations that often go overlooked with regards to an organization's capacity to adapt certain forms of data collection, analysis, and maintenance. This research uses a case study to demonstrate barriers overlooked by generalized data literacy resources and further contribute to discourse amplifying the realities of data infrastructure in smaller, community-based nonprofit organizations.

This research was conducted while COVID-19 health guidelines were enacted by the university. As a result, human subjects research was reduced which limited the number of organizations that were able to participate in this study. The study proceeded with a case study of a single organization. To protect the anonymity of the organization discussed in this research and their clientele, the organization will henceforth be referred to as Health Nonprofit.

Framing the study

Health Nonprofit has been a fixture in the central Durham area for decades, supporting populations as they manage terminal diseases as well as substance addiction and abuse. The mission of the organization has grown with its community. In addition to coordinating healthcare for those lacking insurance, the organization presently provides resources to families and individuals experiencing homelessness, food insecurity, and other health inequities. Historically, Health Nonprofit has functioned as a service provider, though leadership notes that their long-term operational model will move towards being a facilitator of these services. As such, Health Nonprofit will soon be more of a space that invites other organizations to provide services, existing as the physical infrastructure supporting community partners. Organizational leadership cites the decentralization of their traditional clientele as a primary motivator for this shift. One response from the organization explained:

> The problem that we face as an agency is that the location and the services may not fit the population of the residents in the immediate locale. And that's a shift in people. Gentrification and all those kind of things. When this agency was started,

> this area had a high concentration of those health disparities and now the area has changed and so a lot of the services that we provided are not, from a business perspective, are not as valued in this type of space.

A 2018 report affiliated with the North Carolina Poverty Research Fund illustrates the historical policies that have shaped gentrification in Durham. The report discusses Durham's overall population growth and the accompanying socioeconomic disparities born from the residue of redlining and urban renewal in the area. Researchers Allison De Marco and Heather Hunt note that Durham's population grew 14% to 306, 212 between 2010 and 2016, and the median residential sale price in downtown Durham skyrocketed from $180,000 in March 2012 to $350,000 in March 2018 (2018). Despite this growth, the image of economic affluence in Durham remains glaringly White. Non-Hispanic White residents experience poverty at lower rates than other racial categories and maintain a higher median household income despite the city being majority non-White. Pithily articulating the ongoing effect of gentrification in the area, the report summarizes, "neighborhoods that were largely black and working class [have] become richer and whiter" (De Marco & Hunt, 2018, p. 28).

The physical indicators of Durham's rapid gentrification can be seen in the number of luxury apartment buildings erected over the past 10 years and the increasing number of craft breweries using witty puns to signal their ties to the "Bull City." One does not need quantifiable evidence to know that Durham is different and that the needs of the community are different as a result. That feeling of change, that experiential empirical evidence, is valid. In introducing the concept of data feminism, D'Ignazio and Klein (2020) describe a more inclusive definition of data science, one that "does not erect

barriers based on formal credentials, professional affiliation, size of data, complexity of technical methods, or other external markers of expertise" (p. 14). This demonstration of inclusivity is a direct response to the notion that data solely exists as numbers and must be the product of an extensive analysis conducted by highly-trained researchers.

Expanding notions of acceptable data does not mean that data in more quantitative forms cannot further support the mission of Health Nonprofit and comparable organizations. Knowing the shift in median income of surrounding neighborhoods since the organization first opened its doors, for example, might be a way to better demonstrate changes in the community's socioeconomic class composition. Coupling that with information about the general income of people who have sought different sorts of services in the past might better inform what the organization should look like in the next 5-10 years. People are being displaced, but are those people still using the services provided by Health Nonprofit? If the physical infrastructure of the organization cannot move to follow its clientele, are outreach initiatives the next step? What might they look like? Quantitative data, qualitative data, and data that represents various combinations of the two have a place in nonprofit organizations. Issues arise when increased measures of impact are predominantly grounded in one type of data that is not easily ascertained by certain organizations.

Many nonprofits lack the organizational structure to warrant profit-driven, financial determinants of success (Kaplan, 2003) despite increased pressures from external funding sources that require evidence demonstrating that services provided are effective and efficient (Carnochan, Samples, Myers, & Austin, 2014). In response to

greater calls for accountability, performance measurements are, thus, used to convey effectiveness and efficiency as well as measure staff workload and productivity (MacIndoe & Barman, 2013).

There exists, however, discord surrounding who benefits from the existence of these performance or impact (henceforth used interchangeably) measures. Lumley (2013) suggests that, despite funder requirements motivating increased impact measures, "the main reward is a better service, not increased funding." The decision to collect data and the data acquired as a result are both intentional and rich with meaning. As Williams (2013) asserts, "a data set is already interpreted by the fact that it is a set: some elements are privileged by inclusion, while others are denied relevance through exclusion" (p. 41). When measures are created and data is abstracted for the purposes of appeasing funders, information about the population served, the organization's infrastructure, and the workforce providing services are compromised. The question then becomes, do these measures of impact create a better service or do they merely paint a better picture of organizational success? Subsequently, can these two intentions coexist?

This qualitative case study will explore the role of impact measures within a nonprofit organization's broader data infrastructure. This research is meant to contribute to the growing body of literature examining the consequences of data-driven work in the nonprofit sector. The following literature review describes the logic that precedes preferences for quantitative representations of data before creating a foundation to emphasize the benefit that elevating diverse data can have for smaller, community-based nonprofits like Health Nonprofit.

Literature Review

Epistemological power dynamics

In a 2013 collection of essays communicating societal intrigue with data and its cultural impact, Gitelman submits the following on the self-fulfilling nature of data-determinism:

> At first glance, data are apparently before the fact: they are the starting point for what we know, who we are, and how we communicate. This shared sense of starting with data often leads to an unnoticed assumption that data are transparent, that information is self-evident, the fundamental stuff of truth itself. If we're not careful, in other words, our zeal for more and more data can become faith in their neutrality and autonomy, their objectivity. (pp. 2-3)

Gitelman's assessment of data as a starting point for knowledge creation and truth determination echoes the crux of epistemological debates surrounding quantitative and qualitative research paradigms. Whereas quantitative research is distinctively grounded in positivism and a subsequent understanding that there exists an objective reality from which reductions of phenomena might indicate "truth" (Sale, Lohfield, & Brazil, 2002), qualitative research conveys a more subjective view of the universe. Approaches to qualitative research assume the coexistence of multiple realities, dependent on personal and social constructions of the universe, that contribute to the way by which "truth" is understood and articulated (Sale et al., 2002).

Birthed from this 20th century debate were three general schools of thought—purism, situationalism, and pragmatism. Delineation of the three is best understood by how researchers believe methodologies associated with quantitative and qualitative approaches should, or should not, be combined. To elaborate, purists maintain that ontological, epistemological, and axiological assumptions related to quantitative and qualitative methods are inherently different, and thus, such methods cannot and should not be mixed (Onwuegbuzie & Leech, 2005). Similarly, situationalists hold a mono-method stance despite positing that value exists between both paradigms. They further recognize that different research questions might be better suited for one approach over the other. Conversely, pragmatists affirm that qualitative and quantitative methods can be integrated within study design to unearth a more holistic understanding of social phenomena (Onwuegbuzie & Leech, 2005).

While a detailed narration describing the evolution of epistemology is outside the scope of this study, a groundwork for approaches to research lays a foundation for better understanding the power dynamics associated with particular paradigms. Such power dynamics can then be contextualized in contemporary applications of research with particular consideration given to the way data is collected and interpreted in nonprofit organizations. Notions of "truth" and "objectivity" as they relate to methodology are most relevant in framing the effect of data-gathering in nonprofits. "Objectivity," particularly as it persists in understandings of quantitative data methods, affords a certain privilege to researchers whereby they exist as a sort of innocent observer (Gitelman, 2013), estranged from that which they are studying. It absolves the observer of

acknowledging the social context in which the phenomenon may occur and muddles moral obligations that may result from such contextualization.

In speaking to the internal turmoil that accompanied his role as a scientist and a witness to racism and social injustice, W.E.B. Du Bois (1940) remarked, "one could not be a calm, cool, and detached scientist while Negroes were being lynched, murdered, and starved." The detachment Du Bois mentions parallels harmful notions of objectivity in quantitative data gathering. This danger is especially imminent when people served through nonprofit organizations are reduced to data points, as a similar detachment can occur for those who might engage with the data but do not connect with organization clientele. As information systems that prioritize quantitative information over qualitative become more ubiquitous in daily operations (Bopp, Harmon, & Voida, 2017), nonprofits must confront the ramifications of seemingly objective extrapolations of the populations they serve.

Big Data in nonprofit organizations

In recent years, "Big Data" has been used by both the private and public sector to improve operations, enhance marketing, inform policy decision making, and influence program management decisions (Ang, 2019). Definitions of Big Data vary across disciplines, and the phrase is bereft of a single, widely-accepted interpretation. However, understandings of Big Data are often rooted in two primary characteristics: creation of new, unstructured data sources and incredibly large quantities of said data (Few, 2012). Wang (2016) has stressed the importance of "Thick Data" in contextualizing so-called Big Data, encouraging the use of qualitative and ethnographic methodologies in order to

situate traditionally quantitative data within the people, emotions, and stories that contribute to the processes of meaning-making in our world. This understanding mirrors a pragmatic approach to research as it exists in an organizational setting.

Proponents for Thick Data and further integration of qualitative practice in research have continued to emerge across disciplines. In further describing the wealth of knowledge that accompanies the use of Thick Data, Wang (2016) emphasizes,

> When organizations want to build stronger ties with stakeholders, they need stories. Stories contain emotions, something that no scrubbed and normalized dataset can ever deliver. Numbers alone do not respond to the emotions of everyday life: Thick Data approaches reach deep into people's hearts. Ultimately, a relationship between a stakeholder and an organization/brand is emotional, not rational.

Wang's sentiments underscore the notion that data maintains an inherently humanistic quality that fades when data are normalized for the sake of abstraction. Furthermore, data frame, and are framed by, the social contexts in which they exist (Gitelman, 2013). Failing to consider this context may lead to an abyss of data lacking salient meaning.

As nonprofits seek the luster of new data sources and enhanced insights assured by Big Data systems, assessment of broader implications must accompany. Manovich (2011) notes that Big Data has ushered in an era of "data classes" within a "big data society" comprised of three factions: "those who create data (both consciously and by leaving digital footprints), those who have the means to collect it, and those who have the expertise to analyze it" (p. 10). Many nonprofit organizations are often burdened by limited resources and other constraints that impact how they might situate themselves in

the two latter classes. While use of Thick Data could be a way to create more intentional assessment measures, the means to collect such data might be nonexistent.

Decisions to quantify

Conversations surrounding the co-execution of research methodologies and integration of Thick Data in interpretations of Big Data lead to a more pressing question of whether particular phenomena should be quantified at all and what are the resulting consequences when they are. Decisions regarding what sorts of data are collected or emphasized are, as articulated by Kitchin (2014), "the product of choices and constraints, shaped by a system of thought, technical know-how, public and political opinion, ethical considerations, the regulatory environment, and funding and resources" (p. 9). In essence, data are intentional measures, crafted with a particular purpose, under a specific set of circumstances. Even in Big Data systems, where data collection is seemingly apolitical given the presence of sensors that provide near-constant streams of data, the existence of such systems is a political decision, guided by goals for regional planning, private endeavors, and other influences.

The meditated nature of data becomes a potent influencer of what then becomes understood about the social phenomena being abstracted. This impact is illustrated in discourse around the ethical implications of "people analytics," a point of contention in human resources prompted by increased automation in the assessment of organizational culture. Several companies have integrated artificial intelligence (AI) into their day-to-day operations as a means to increase productivity amongst employees. People analytics software can consume information about an employee's actions—in the form of metrics

like emails sent and calendar appointments made—to produce digestible analytics to organizational leadership (Mims, 2015). People analytics quantifies the behaviors of workers, creating an environment where certain actions can become more valuable to a firm because they can be monitored and analyzed. This sort of engagement raises questions as to how, and should, companies quantify less discrete aspects of an organization's culture like team morale, employee satisfaction, and leadership impact. When goals are driven by the desire to optimize performance metrics, those facets of an organization that are not easily quantified may become overshadowed (Mims, 2015) or may be unsuitably abstracted for the sake of making them more quantifiable.

Conceptualizing what should or should not be quantified is a related, though distinct, conversation from whether what is being measured is what should be measured. That is, are data gathered because they provide insight towards assessing a perceived issue? Or are they amassed merely because it is easy to do so? Big Data systems generally capture those aspects of human behavior and environmental conditions that present less barriers to track. As Kitchin (2014) acknowledges, "[Big data] takes these data at face-value, despite the fact that they may not have been designed to answer specific questions and the data produced might be messy, dirty, full of occlusions and biases" (p. 9). Big Data can result in tremendous amounts of inconsequential information given that larger volumes of data do not necessarily equate to a greater number of insights synthesized from such data. There have been instances where organizations failed to establish quality checks and to set priorities for data gathering which resulted in lengthy reports missing pertinent insight (Ang, 2019; Fedak, 2018). Measures that are ill-

suited for the social or organizational problems they are created to help address can be a critical side-effect of misguided or excessive data gathering.

Contextualizing the creation of performance measures

The call for performance measures and accountability in nonprofits arose in the 1990s as external stakeholders—taxpayers, clients, funders, and the like—insisted that nonprofit organizations be more transparent with regards to internal operations and handling of resources (Ebrahim & Rangan, 2014; Benjamin, 2012). Monitoring and evaluation tend to frame the data collection process executed in nonprofits (Bopp et al., 2017). Twersky (2018) defines monitoring as "the routine data collection and analysis conducted by an organization about its own activities" and evaluation as "the kind of data collection and analysis conducted by an independent third party" (p. 57). Performance measurements have also been articulated as "outcome measurements" understood as a means for quantifying impact of an organization's services on clients through persistent use of performance indicators (MacIndoe & Barman, 2013; Benjamin, 2012).

Nonprofit organizations exist within multifaceted social systems and attempt to address a myriad of complicated problems. The way by which they approach performance indicators conveys meaning as to whether clients or funders take priority when measures are established. There are those who believe that organizational allegiance lies in the hands of donors more so than populations served. For example, Roy (2018) states, "In the long run, NGOs are accountable to their funders, not to the people they work among. They're what botanists would call an indicator species. It's almost as though the greater the devastation caused by neoliberalism, the greater the outbreak of

NGOs." The notion of increased presence of nonprofit organizations as a result of neoliberalism is discussed extensively in *The Revolution Will Not Be Funded: Beyond the Non-Profit Industrial Complex*, an anthology curated by INCITE!, an organization established in 2000 in response to the co-optation of the antiviolence movement by the government. The concept of the nonprofit industrial complex is defined by Dylan Rodriguez as, "a set of symbiotic relationships that link political and financial technologies of state and owning class control with surveillance over public political ideology" (INCITE!, 2007, p. 8).

The privatization of work for social good is perpetuated by the existence of nonprofits who are forced to adjust organizational goals and actions to satisfy private and government funding sources. These funders can thereby influence, and subsequently control, how work for social good manifests. The paradox then lies in needing to provide certain sorts of data to obtain funding while wanting key performance indicators, and other determined measures, to improve the quality of services shared with clients.

Research Questions

The culture surrounding data-driven decision making in nonprofit organizations dichotomizes organizations whose well-maintained data infrastructures are exemplars of best practice and those who are not equipped to provide robust datasets of the populations they serve. Smaller, community-based organizations like Health Nonprofit can certainly benefit from collecting, understanding, and communicating diverse—in type and scope—sets of data about their clients. However, there must be a more nuanced understanding of the environmental and cultural dynamics that play a role in how data in these organizations has existed historically and how it might materialize long-term.

Many resources encouraging better data literacy, management, and communication overlook the complexity of barriers that exist in tandem with limited financial capital. To better elucidate the depth of these challenges, this study grounds the following research questions in a case study of Health Nonprofit.

1. What has data collection and management looked like within the organization historically?
2. How does the organization define impact? How is impact measured if at all?
3. What barriers exist to adopting methods of data collection that differ from present practice?

Methodology

This study explores the posited research questions from the perspective of Health Nonprofit, a nonprofit organization that works to provide support and resources for individuals and families experiencing homelessness and the impacts of health disparities in Durham, North Carolina. Using qualitative content analysis and a semi-structured interview, this study investigates Health Nonprofit's data infrastructure and the organizational and community influences that shape the way data influences daily operations and supports organization longevity.

Positionality and researcher role

Interest in conducting this study was ignited, in part, by the researcher's background working in a direct services role as a part of a national nonprofit organization. As such, interpretations of interview content are from a mindset affirming the belief that performance measurements can inadequately communicate the experiences of staff, leadership, and the populations they work with. The notion that many outcome measure frameworks insufficiently capture the totality of the relationship between frontline workers and clients has been demonstrated in other literature (Benjamin, 2012).

Research participants and sampling

Opting to focus on an organization that operates in Durham, North Carolina, provides a unique context for analyzing study results. Within the past decade, Durham has experienced efforts towards city revitalization which have since translated to concerns surrounding neighborhood gentrification. “Story of My Street: Gentrification in Durham” is a 2018 project conducted by The Herald-Sun which documents stories, commentary, and Facebook group interactions of Durhamites and their impressions of gentrification in the area. Durham natives and recent residents have described gentrification as “the innocuous-seeming revitalization, improvement of a neighborhood or district. But in practice it is a violent ... tool that feigns color blindness and ‘the invisible hand’ as it removes and excludes poor people, mainly of color, from their community spaces they’d previously held for generations” and as “changing a development and/or community to meet the needs and desires of the more affluent. Achieved through pricing out people who currently reside or shop in the area” (Vaughan & Eanes, 2018). Gentrification, as such, can have a distinct impact on the way homelessness is both criminalized and supported in an area.

Unexplored in previous research surrounding nonprofit data-driven performance measures, the study is framed by a systematic inequity vexing Durham’s homeless and at-risk populations and the social service organizations that support them. Nonprofit organizations that work with these populations may require additional guidance with regards to becoming more data literate and enhancing their data infrastructures. Furthermore, framing this study in this manner could establish a footing for understanding the posited research questions on a broader scale.

Initially, this research intended to explore multiple organizational perspectives. Comparable studies exploring the impact of data-driven measures on more than one nonprofit organization do so within a particular subset, or subsets, of human services missions (Carnochan et al., 2014; Carman & Fredericks, 2009; Benjamin, 2012). As such, selecting a common theme of homelessness services was done so to narrow the scope of the study. Whereas incorporating organizations from a breadth of specialties might provide a more robust data set, it would also mandate nuanced understanding of terminology and practices given the inherent differences in programmatic goals and themes. Accordingly, the analysis of the results of this study may not translate to other domains of nonprofit work.

Due to the initial focus on homelessness as a central theme amongst organizations, the study follows a purposive sampling method. Organizations were initially chosen from a directory of nonprofit organizations available on the Durham Chamber of Commerce Website (http://members.durhamchamber.org/list/category/non-profit-organizations-services-1797). Study participation was reduced to one organization that was interviewed before university-wide limitations on human subjects research were implemented.

Data collection methods

The initial phase of data collection included a content analysis of publicly-available publications communicating organizational missions and data collection practices. Content also included community impressions of the organization as synthesized through reviews on public-facing social media sites. Content could have

included published annual reports, websites, and other physical and digital materials. This study did not assume that the participating organization would have all, or even any, of these materials. Information gathered in this phase was used to guide interview questions in the next phase of the data collection process.

The study used a semi-structured, in-person interview to explore narratives from organizational leadership (Appendix A). The study anticipated the incorporation of perspectives from staff members in different positions, including frontline workers and leadership. Frontline work can be considered the direct interactions with those seeking service by organizational staff and volunteers (Benjamin, 2012). While interviewing different staff members was ideal, organizational availability and external restrictions limited this possibility. When multiple organizations were to be interviewed, the use of a semi-structured interview was meant to account for operational variances in organizations while still allowing for more structured questions to be addressed (Luo & Wildemuth, 2009).

Tools used for data collection included voice recording software on the researcher's personal laptop, word processing software for note taking and audio transcription, and a secure local storage drive to house recordings, notes, transcriptions of the recordings, and preliminary reviews of results.

Data analysis methods

Data gathered from the first phase of data collection was hand-coded using content analysis, a method to help identify trends persistent in the available documentation (Vaismoradi, Turunen, & Bondas, 2013). Particular consideration was

given to the ways external information and data described the organization. Information gathered from content analysis helped incorporate organization-specific inquiries, generating a more informed, in-depth interview.

The interview was completed and transcribed by the interviewer before directed content analysis was used to gain insights from interview information. Directed content analysis acknowledges an understanding of relevant literature prior to the synthesis of new themes from the data (Zhang & Wildemuth, 2009). An initial review of the transcription allowed for the construction of coding themes that were applied to the analysis in subsequent reviews of the text. Data gathered from both phases of analysis were used to obtain a more holistic view of how data exists in Health Nonprofit.

Research Quality and Ethical Considerations

Any interaction with human participants warrants consideration for ethical concerns. The researcher conducting this study completed CITI Research Ethics and Compliance Training to help ensure ethical protocols were followed throughout the research process. Additionally, this study obtained verbal consent from participants prior to audio recordings, and recordings were deleted once results of the study were written. Participants were informed that their participation was optional and that they were able to withdraw their responses, if desired. The study received IRB exemption (Reference ID 273581) from the Office of Human Research and Ethics at the University of North Carolina at Chapel Hill (Appendix B).

The purposive nature of the study's sampling allowed for an in-depth assessment of the individual organization. However, this method restricts the contexts in which the findings might be considered transferable. Furthermore, the potential for deductive disclosure influenced what information could be shared about the organization which may also impact transferability.

Results and Discussion

Data collection and management

Some details regarding Health Nonprofit's daily operations, specific location, and community presence have been omitted from the reporting of this study to preserve the anonymity of the organization, leadership, staff, and additional stakeholders. As a result, this exclusion may influence the way the reporting and discussion of these results are contextualized. However, some information about Health Nonprofit and its present data infrastructure can be shared to scaffold the challenges described henceforth.

Health Nonprofit is a small operation with a front desk team, organization leadership, volunteers, and a number of partner organizations that have access to the building to provide healthcare to those that seek services. When individuals visit Health Nonprofit—to seek services or take a tour of the location—they are required to provide basic demographic information such as their name, their time of check-in/check-out, their race, gender, and reason for visiting. This information is recorded on a physical sheet that is then transferred to a spreadsheet maintained by front desk staff. The organization's website allows individuals to express interest in services offered by the organization through an online form. Inquiries and interest are then routed to front desk staff and some individuals in leadership. In addition to visitor and potential interest information, Health Nonprofit also houses physical health records for Health Nonprofit as well as the partner

organizations who provide services in the building. These records are maintained in storage containers in a secured, on-site location.

Health Nonprofit communicated that their desired method of managing client data and information, should it change, would include the digitization of older records as well as an electronic check-in mechanism that could conveniently translate service information to charts and other visualizations. The following discussion articulates the challenges that prevent the implementation of this ideal scenario.

Synthesizing impact measures

Health Nonprofit's leadership is acutely aware of a need to gather information beyond visitor names and basic demographics. When asked about what sorts of things are important to measure in the context of the organization, the following was expressed:

> …once you have a building, you kind of have to know the people that are coming in and out of it. Demographics of the people that you serve. And this is an area that we could do better in… I think that that's just one basic way, is just knowing who you serve and what are the needs of the people you serve.

Leadership detailed past use of an external state-administered community needs assessment to articulate the demographics of the community to routine donors and supporters. The use of an external source highlights an awareness of the importance in having information about who is being served while spotlighting the need for this to include data gathered by the organization. Health Nonprofit leadership communicated that showing donors how their investment impacts the organization is a persistent pressure.

A quote garnered through content analysis of organizational reviews underscored one blatant opportunity for data to inform the improvement of services in the future. The quote has been paraphrased for the sake of anonymity. In essence, the review acknowledged that the organization offers too many services which compromises their ability to excel in any particular area. The critique expressed that the organization was a waste of taxpayer funds. Although this is but one impression from one person's interaction with the organization, it is supported by Health Nonprofit's lack of a formalized method for determining what services to provide. Given the absence of recorded, organization-collected data about who their population is and how services have existed or changed, there is little formal data to demonstrate impact to ultimately acquire funding.

Despite their potential areas of adjustment, Health Nonprofit serves as an important counterpoint to the necessity of quantitative data in nonprofit organizations. Increased pushes towards data-driven decision-making in the nonprofit realm assume a sort of homogeneity in the way impact is defined and observed by organizational stakeholders. Although many funding bodies require evidence by way of charts, graphs, and "the numbers," the reasons individuals or groups opt to give varies wildly. In many instances, these motives are not the result of a quantified demonstration of impact. Health Nonprofit leadership identified that a reason many donors who have given in the past will continue to do so is simply because they have for years. The aforementioned negative review is fixated amongst a host of other comments and reviews encouraging people to give to the organization, pairing praise with personal anecdotes and testimonies. The

following examples are summarized or paraphrased from public reviews of the organization. The content of the reviews is not reported verbatim to decrease the possibility of deductive disclosure.

> Health Nonprofit is a great place that helps a lot of people. I encourage you to donate if you can. They help people who don't have insurance and provide services for different health and family issues.

> The folks at Health Nonprofit have changed my life immensely. The services and opportunities they provide are endless. The staff are so kind and caring.

> The organization does such incredible work in Durham!

> Health Nonprofit saved my life when I was struggling with drug addiction. I love everyone there who helped me through my battle, and I am thankful to be clean.

In the interview, Health Nonprofit leadership relayed a story of a client who did not meet the organization's traditional criteria for providing services due to the individual's young age. Nonetheless, the client was experiencing homelessness and food insecurity, characteristics that ultimately took precedence when the organization extended support. With help from Health Nonprofit, the individual was able to complete their GED and gain employment. This story was shared in response to an interview question about the sort of information that is communicated with the public about populations served by

Health Nonprofit. The story not only demonstrates the type of success wrought by seeking help from the organization, it serves as a testament to the evolving scope of Health Nonprofit's mission. Health Nonprofit excels in this sort of data gathering. They know their people in ways that cannot be described by a chart or a graph. This is not to say that an increased attention to data that is more easily quantified will eradicate the extent to which these stories are shared. Increased pushes towards data-driven decision-making will, however, shape what information is considered valuable about those populations that seek services. Nonprofits and grassroots organizations will suffer as the nonprofit sector further adopts models of impact that rely less on the stories that coincide with knowing one's community outside of "the numbers."

Consideration of barriers

For smaller nonprofits like Health Nonprofit, the ability to expand their data infrastructure is often hampered by a lack of financial resources, staffing limitations, and a host of cultural barriers. The interplay of these issues creates a scenario where keeping the building's doors open to provide services supersedes any fundamental operational shifts that alterations to present data management might introduce. Limited funding is a pervasive issue in nonprofits even outside of the ways it impacts an organization's ability to change the way they collect and manage data. For Health Nonprofit, specifically, the ability to hire those with the necessary skillset is a direct result of this lack of funding.

Leadership acknowledged that fewer than five individuals comprise the front desk staff team and they are valuable contributors to the success of the organization. They are the first point of contact for visitors as well as the first people to field online inquiries

about services. These staff members are not, however, trained data managers. Leadership noted that while these staff members are not necessarily opposed to adopting new technologies, there exists a certain degree of vulnerability related to them developing a new skillset. Leadership identified an "embarrassment of sorts" that coincides with learning a new skill past a certain age as a constraint for implementation of novel data management within the organization. As such, recommendations and resources encouraging data literacy in nonprofits must incorporate an understanding of learner self-efficacy at an organizational level.

Enhancing data literacy is not simply a matter of teaching a new skill; it mandates an understanding that involved parties are even willing to learn said skill. Health Nonprofit's honest observation of their staff's learning style emphasizes the necessary step of destigmatizing adult learning before any data-related conversations might ensue. While it may not be the case that every small nonprofit must surmount this particular obstacle, this example serves as a broader reminder of the challenges impacting the ease with which general recommendations exist in practice.

In addition to barriers introduced by the variability in employee learning, there are a number of cultural considerations that further impact how data management might be revised in Health Nonprofit. In discussing the expansion of the organization, Health Nonprofit's leadership noted that the organization is,

> "not looking to limit what can be done, so whatever can be done may not need to be done forever. We're in a pop-up culture, so as long as we can continue to advance the community one step at a time [we're] good."

Leadership's observation illustrates the fleeting permanence of operational models presently transpiring in other sectors of the economy. The ubiquity of rapid, dynamic business practices can be seen in phenomena like fast fashion, gig labor, and, as Health Nonprofit identified, pop-up culture.

The way this social shift might impact nonprofit organizations has yet to be explored extensively in literature. However, Health Nonprofit is already engaging with a challenge that will progressively grow in coming years. One can only speculate as to how this may influence the way nonprofits operate, but it poses an important challenge as to how data will be reconstructed and impact re-articulated. In Health Nonprofit's case, if the same programs aren't offered for consecutive years, or even consecutive months, how will it influence the way data is collected and modeled? What data will be used to determine what services are "trendy" or necessary at present? If different services draw different populations at different times, how will that influence what is possible to extrapolate about the population Health Nonprofit serves as a whole? Furthermore, how do you assess these things without perpetuating the hyper-surveillance of marginalized communities? This onslaught of questions is difficult to answer even when a robust data infrastructure is present. It adds a layer of complexity for those organizations who trail in certain facets of data management.

Study Impact, Limitations, and Future Research

Health Nonprofit is but one example of how organization-specific considerations can influence the ease with which data infrastructure is enhanced outside of more apparent funding limitations. This case study has identified important themes surrounding the need for more nuanced resources and support for smaller nonprofit organizations. The nonprofit sector as a whole will be forced to grapple with the ever-growing push for data-driven decision making and data-grounded evidence of impact. Although the intention of this study is not to declare what forms of data are more valuable than others, it is meant to question the disproportionate weight assigned to quantitative data in the nonprofit realm and illuminate the harm that can result when smaller nonprofits lack the infrastructure to produce such data.

Health Nonprofit excels at knowing their people—the population who seeks their services—at an informal, observational level. There are endless anecdotes of things that have gone well and areas that could stand improvement that are not necessarily documented in a database or visualized in a dashboard. This sort of data has value and, in many ways, is sufficient for a number of community members and funders alike. Nevertheless, the adequacy of this type of data is already, and will continue to be, a point of concern as the organization redefines its mission to evolve with the surrounding Durham community.

Contextualizing this research in a Durham nonprofit organization providing homelessness support services provided a unique lens through which previous literature has not viewed issues discussed. Such a study can provide insight as to how better information systems might be created and managed in the nonprofit realm while also shedding light on the importance of critical data science in this sector. Conversely, the small scope of this study limits the extent to which its findings might be applied to different types of nonprofits.

This study describes some of the factors that must be centered when resources for improvement are developed. Consideration for the themes described in this study is lacking in many resources encouraging data literacy and improved data management in nonprofits. Further research will continue to build upon this study, emphasizing the inclusion of additional, similar organizations as well as organizations that serve different types of people. Subsequent research should also consider the growing dangers surrounding the pervasive data and digital surveillance of vulnerable populations and the coinciding consequences for nonprofit organizations.

As the landscape of impact measures in nonprofit organizations evolves, data disparities will multiply and threaten the longevity of organizations like Health Nonprofit. Increased attention must be paid to the barriers experienced by such organizations. To support the sustainability of these entities and the services they provide, the nonprofit sector must critically reexamine how different types of data are sought, required, and valued.

References

Ang, Y. Y. (2019). Integrating Big Data and Thick Data to transform public services delivery. *IBM Center for The Business of Government*. Retrieved from http://www.businessofgovernment.org/sites/default/files/Integrating%20Big%20Data%20and%20Thick%20Data%20to%20Transform%20Public%20Services%20Delivery.pdf

Benjamin, L. M. (2012). Nonprofit organizations and outcome measurement: From tracking program activities to focusing on frontline work. *American Journal of Evaluation*, *33*(3), 431–447. https://doi.org/10.1177/1098214012440496

Bopp, C., Harmon, E., & Voida, A. (2017). Disempowered by data: Nonprofits, social enterprises, and the consequences of data-driven work. *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems - CHI 17*. https://doi.org/10.1145/3025453.3025694

Carman, J. G., & Fredericks, K. A. (2009). Evaluation capacity and nonprofit organizations: Is the glass half-empty or half-full?. *American Journal of Evaluation*, *31*(1), 84–104. https://doi.org/10.1177/1098214009352361

Carnochan, S., Samples, M., Myers, M., & Austin, M. J. (2014). Performance measurement challenges in nonprofit human service organizations. *Nonprofit and Voluntary Sector Quarterly*, *43*(6), 1014–1032. https://doi.org/10.1177/0899764013508009

De Marco, A., & Hunt, H. (2018). Racial inequality, poverty, and gentrification in Durham, North Carolina. *North Carolina Poverty Research Fund.* Retrieved from https://fpg.unc.edu/sites/fpg.unc.edu/files/resources/reports-and-policy-briefs/durham_final_web.pdf

D'Ignazio, C., & Klein, L. F. (2020). *Data feminism*. The MIT Press.

DuBois, W.E.B. (1940). *Dusk of dawn: an essay toward an autobiography of a race concept.* Harcourt, Brace and Company.

Ebrahim, A., & Rangan, V. K. (2014). What impact? A framework for measuring the scale and scope of social performance. *California Management Review*, *56*(3), 118–141. https://doi.org/10.1525/cmr.2014.56.3.118

Fedak, V. (2018, March 16). Big Data misuse can break your business. Retrieved from https://towardsdatascience.com/big-data-misuse-can-break-your-business-ef6432dfd188

Few, S. (2012). Big Data, big ruse. *Visual Business Intelligence Newsletter*. Retrieved from https://www.perceptualedge.com/articles/visual_business_intelligence/big_data_big_ruse.pdf

Gitelman, L. (Ed.). (2013). *"Raw data" is an oxymoron*. The MIT Press.

INCITE!. (2007). *The revolution will not be funded: Beyond the non-profit industrial complex*. South End Press.

Kaplan, R. S. (2003). Strategic performance measurement and management in nonprofit organizations. *Nonprofit Management and Leadership*, *11*(3), 353–370. https://doi.org/10.1002/nml.11308

Kitchin, R. (2014). The real-time city? Big data and smart urbanism. *GeoJournal*, *79*(1), 1–14. https://doi.org/10.1007/s10708-013-9516-8

Lumley, T. (2013, July 10). *Raising the bar on nonprofit impact measurement*. Stanford Social Innovation Review. https://ssir.org/articles/entry/raising_the_bar_on_nonprofits_impact_measurement

Luo, L. & Wildemuth, B. M. (2009). Semistructured interviews. In B.M. Wildemuth (Ed.), *Applications of social research methods to questions in information and library science* (pp.232-241). Libraries Unlimited.

MacIndoe, H., & Barman, E. (2012). How organizational stakeholders shape performance measurement in nonprofits. *Nonprofit and Voluntary Sector Quarterly*, *42*(4), 716–738. https://doi.org/10.1177/0899764012444351

Manovich, L. (2011). Trending: the promises and challenges of big social data. In M.K. Gold (Ed.). *Debates in the Digital Humanities*. The University of Minnesota Press. https://doi.org/10.5749/minnesota/9780816677948.001.0001

Mims, C. (2015, February 16). *In 'people analytics,' you're not a human, you're a data point*. The Wall Street Journal. https://www.wsj.com/articles/in-people-analytics-youre-not-a-human-youre-a-data-point-1424133771

Onwuegbuzie, A. J., & Leech, N. L. (2005). On becoming a pragmatic researcher: The importance of combining quantitative and qualitative research methodologies. *International Journal of Social Research Methodology, 8*(5), 375-387. https://doi.org/10.1080/13645570500402447

Roy, A. (2018, July 25). *The NGO-ization of resistance*. Investig'action. Retrieved from https://www.investigaction.net/en/the-ngo-ization-of-resistance/

Sale, J. E., Lohfeld, L. H., & Brazil, K. (2002). Revisiting the quantitative-qualitative debate: Implications for mixed-methods research. *Quality & quantity*, *36*(1), 43–53. https://doi.org/10.1023/A:1014301607592

Twersky, F. (2019, Winter). Time for a three-legged measurement stool. *Stanford Social Innovation Review, 17*, 57-58. Retrieved from https://ssir.org/articles/entry/time_for_a_three_legged_measurement_stool

Vaismoradi, M., Turunen, H., & Bondas, T. (2013). Content analysis and thematic analysis: Implications for conducting a qualitative descriptive study. *Nursing & Health Sciences*, *15*(3), 398–405. https://doi.org/10.1111/nhs.12048

Vaughan, D. B., & Eanes, Z. (2018, April 24). 'Story of My Street': Gentrification and neighborhood change in Durham. *The Herald Sun*. https://www.heraldsun.com/news/local/counties/durham-county/article204694739.html

Wang, T. (2016, January 20). *Why Big Data needs Thick Data*. Medium. https://medium.com/ethnography-matters/why-big-data-needs-thick-data-b4b3e75e3d7

Williams, T.D. (2013). Procrustean marxism and subjective rigor: Early modern arithmetic and its readers. In L. Gitelman (Ed.), "*Raw Data" Is An Oxymoron* (pp.41-59). The MIT Press.

Zhang, Y. & Wildemuth, B. M. (2009). Qualitative analysis of content. In B.M. Wildemuth (Ed.), *Applications of social research methods to questions in information and library science* (pp.308-319). Libraries Unlimited.

Appendix A: Interview Guide

Understanding Key Performance Indicators in Durham Nonprofit Organizations

Interview Guide

Principle Investigator: Mariesha McAdoo

Thank you again for agreeing to participate in this interview. As a reminder, the goal of this study is to explore how key performance indicators, or KPIs, impact nonprofit organizations. I will be asking you questions about how your organization collects, uses, and shares data. Your participation in this study is completely voluntary and you are welcome to withdraw at any time. During our time together, I would like for this to be more of a conversation than a strict interview. While I do have some questions that I would like for us to discuss, I am interested in learning about the organization from your perspective and would like the interview to proceed organically. As we talk, I might jot a few notes down on my laptop if there are things that I am interested in revisiting later.

[If they have previously consented to the interview being recorded]

If you have consented to this interview being recorded, I will start the recording before the first question and confirm that the recording has started. This recording is only for reference purposes. I will be the only person listening to the recording, and the recording will be discarded once the conversation has been transcribed. Is it still okay for me to record our interview today?

[Wait for response.]

Great! Do you have any questions for me before we begin?

[Answer any questions]

[Start audio recording once questions have been answered]

At this time, the audio recording has started.

1. To begin, can you tell me a little bit about the organization? In your words, what is the organization's mission, or what are some of its goals?

2. What types of people seek services from your organization?

3. Can you describe your role within the organization? How long have you been in your current role and have you held different roles previously?

4. Broadly, how does your organization define success? For example, what might a successful year look like for the organization?

5. In your opinion, do you think the way your organization measures success makes sense for the sort of work that you do?

6. Does your organization use key performance indicators to measure success? If so, what are they?

7. Does your organization collect data about donors, populations you serve, marketing, or other aspects of operation?

   If yes,

   - Why does your organization choose to collect the data that it does? What influences what data will be collected?
   - Who oversees the data collection process?
   - How often is this data collected?
   - Who would you say benefits most from data collection?
   - How does this data impact the populations you serve or the services you provide?
   - Do you think data collection could be improved within your organization? If so, in what ways?

If no,

- If your organization does not collect, why not?
- Do you think your organization should collect data?

8. What do you think data collection, or lack thereof, will look like in your organization in the next year? The next five years?
9. Are you familiar with the term "big data," and if so, does your organization work with big data or big data collection methods?
10. [Ask any follow-up questions or questions related to organization-specific content analysis]

This concludes our interview. Do you have any questions for me before we finish up?

[Answer any questions]

If there is anything that we talked about today that I need to clarify, I will be in contact within the next 1-3 weeks. If you have any questions for me in the meantime, please feel free to email me or call at the contact information provided on the research information sheet. Thank you again!

[Stop recording]

Appendix B: IRB Exemption Notification

To: Mariesha McAdoo and Amelia Gibson
School of Information and Library Science

From: Office of Human Research Ethics

Date: 2/06/2020
RE: Notice of IRB Exemption
Exemption Category: 2.Survey, interview, public observation
Study #: 20-0225

Study Title: Impact for Whom? Understanding Key Performance Indicators in Durham Nonprofit Organizations

This submission, Reference ID 273581, has been reviewed by the Office of Human Research Ethics and was determined to be exempt from further review according to the regulatory category cited above under 45 CFR 46.104.

Study Description:

Purpose:

This study aims to better understand the impact of data-driven key performance indicators (KPIs) on nonprofit organizations supporting homeless populations in Durham, North Carolina. The study will explore how data collection, management, and publication influence the way services are provided and evaluated in the nonprofit sector.

Participants:

Participants of this study will be leadership, direct-service staff members, and/or volunteers of three organizations that support homeless populations. Individuals and families receiving services from the respective organizations are not the focus of this study and will not be asked to participate.

Procedures (methods):

Using qualitative content analysis and semi-structured interviews, this study will investigate the creation and use of key performance indicators from three recruited organizations. Content analysis will review public-facing documentation of data collection and use made available on organizational websites. Information collected through content analysis will be used to guide some questions in subsequent interviews.

Investigator's Responsibilities:

If your study protocol changes in such a way that exempt status would no longer apply, you should contact the above IRB before making the changes. There is no need to inform the IRB about changes in study personnel. However, be aware that you are responsible for ensuring that all members of the research team who interact with subjects or their identifiable data complete the required human subjects training, typically completing the relevant CITI modules.

The IRB will maintain records for this study for 3 years, at which time you will be contacted about the status of the study.

The current data security level determination is Level II. Any changes in the data security level need to be discussed with the relevant IT official. If data security level II and III, consult with your IT official to develop a data security plan. Data security is ultimately the responsibility of the Principal Investigator.

Please be aware that approval may still be required from other relevant authorities or "gatekeepers" (e.g., school principals, facility directors, custodians of records), even though the project has determined to be exempt. .
IRB Informational Message - please do not use email REPLY to this address